

sive treatment of thermal energy exchanges between the organism and its environment.

The physiological variables of heat loss, metabolism, growth, endocrine responses, behavioral responses, and temperature changes of the animal are discussed, in some instances, in considerable detail, and the book will therefore be of interest to environmental and comparative physiologists. To a lesser degree it is of interest to those who are concerned with the effects of climate on the economics of the production of pigs as a source of food. Matters not central to this theme appear to have been drawn from limited sources. This has resulted in the omission of important contributions that would have been more useful in making the author's points than some of those selected. For instance, temperature and humidity gradients over an ice-skating rink are referred to, but no mention is made of detailed work in the literature dealing with similar gradients in the Arctic and Subarctic as related to the ecology of both above- and below-ground animals. In addition, this noncomprehensive treatment of subjects not central to climatic physiology has resulted in general statements which may be criticized. The book demonstrates clearly that the author has a great deal of expertise on the measurable responses of pigs to climatic variables, but some of his treatment of comparative physiology lacks depth, an example being the cursory treatment of the calorogenic response to norepinephrine and epinephrine and its relationship to non-shivering thermogenesis.

The book is a useful compilation of existing data on the responses of the pig to climate. Although the author points out that the work is not comprehensive and exhaustive, it appears to be so for the available climatic information on the pig, though not for subjects ancillary to this main theme.

THOMAS R. A. DAVIS

Arthur D. Little, Inc.
Cambridge, Massachusetts

Microbiology

Les Bactéries Anaérobies. A. R. PRÉVOT, A. TURPIN, and P. KAISER. Dunod, Paris, 1966. xxiv + 2188 pp., illus. \$74.75.

At long intervals, in almost every field, a book is written that organizes and summarizes the accumulated knowl-

edge so completely and clearly that understanding of the field attains a new level. Such, in anaerobic microbiology, was *Les Microbes Anaérobies* by Weinberg, Nativelle, and Prévot in 1937. Such, 30 years later, is *Les Bactéries Anaérobies*. Representing, as it does, 45 years of work by Prévot at the Institut Pasteur in Paris, this book brings together most of what is known about the anaerobic bacteria by a man who knows them well. *Les Bactéries Anaérobies* is concerned primarily with the individual species of anaerobes. The first 67 pages cover the general topics of anaerobiosis, anaerobic bacteria in nature, the possibility of utilizing anaerobes in industry, and the evolution of their classification. The remaining 2100 pages deal with the characteristics of the individual species—215 species of spore-forming and 307 species of non-spore-forming bacteria, divided into 51 genera in 19 families. Where sufficient information is available, each organism is discussed under the headings Synonyms, History, Habitat, Morphology, Physiology, Cultural Characteristics, Biochemical Characteristics, and Pathogenic Properties. Many of the species have been studied in Prévot's laboratory, and the information presented is based on his observations. Also, a selected bibliography is given. For references before 1937 the reader is directed to *Les Microbes Anaérobies*.

The schematic organization of the book is based on Prévot's classification of the anaerobic bacteria, the only unified systematic treatment of all the anaerobic bacteria as yet advanced, but one that is not universally accepted, particularly by British and American anaerobists. It does serve as a satisfactory framework for presenting the information that has here been compiled. Indeed, Prévot's scheme of classification, as outlined in the table of contents, is the only key to *Les Bactéries Anaérobies*, for there is no index. Most microbiologists will find it convenient to have side by side with this book Prévot's *Manual for the Classification and Determination of the Anaerobic Bacteria*, translated by Fredette (Lea and Febiger, 1966), for the latter book is indexed and provides summary descriptions of the bacteria that are covered much more thoroughly in *Les Bactéries Anaérobies*.

The large number of species listed in this book is a disadvantage. Few microbiologists working with the anaerobic bacteria would accept as clearly

distinguishable the more than 500 species given here, nor would they approve the characteristics used to distinguish among some species and some genera. Admittedly, however, it would be difficult to find any two anaerobists who would agree entirely on the number of species of anaerobes that should be recognized. This disagreement is not entirely a matter of different concepts of the definition of a species; it also reflects a lack of information as to the variation allowable within a species. Fortunately, *Les Bactéries Anaérobies* provides a baseline from which we can work to resolve some of these difficulties. It makes evident what information will be needed to determine the identity or nonidentity of various species as well as shows what information is now at hand. It also indicates on what species critical work is most urgently needed. Although one may not agree with Prévot regarding all the species he lists, one cannot help considering *Les Bactéries Anaérobies* an outstanding work on the anaerobic bacteria, a reference book essential for any laboratory working extensively with these organisms.

LOUIS DS. SMITH

Department of Veterinary Science,
Virginia Polytechnic Institute,
Blacksburg

Solids and Liquids

Theory of Condensed Matter. Lectures presented at an international course, International Centre for Theoretical Physics, Trieste, 1967. F. Bassani, G. Caglioti, and J. Ziman, Directors. International Atomic Energy Agency, Vienna, 1968. xiii + 1020 pp., illus. \$20.

There exists an understandable inverse relationship between the molecular complexity of a condensed system and the degree to which it is "understood" in a physicomathematical sense. This book stands closer to the mathematical extreme. Except for a few sections on neutron scattering methods and one on the phenomenological theory of superconductivity, it is concerned with modern mathematical methods in the theory of solids and simple liquids. Thorough coverage is afforded to Green's function techniques for electron and phonon states, to recent but more conventional techniques for electron and phonon dynamics, and to statistical methods for the theory of phase transitions, particularly those of magnetism. Discussions of the band

structures of semiconductors, of beryllium, and of disordered systems, but not of the bands in organic crystals, are included. With respect to defect properties, only surface states are touched on, and those very briefly; nothing on point defects or mechanical properties appears. These omissions were probably intentional and are entirely excusable. The study of relatively simple condensed systems is such an enormous discipline that arbitrary choices are inevitable.

The directors of the course and the anonymous editors of this volume are to be congratulated on their production. It can be viewed either as a textbook which happens to have 30 authors or as the proceedings of a conference with a remarkable uniformity of style. How will it be used? To me it seems that it could find a place as a supplement to available solid state physics and statistical mechanics texts. Owned by a group (since it is expensive) of graduate students who familiarize themselves with the material covered (since there is no index), the book would be a convenient source of detailed descriptions of modern methodologies written with slightly different slants (since the contributors are not, on the whole, authors of existing texts). For the research worker or teacher, the probability of finding at least one excellently prepared set of lectures in his field is rather high, but this advantage will be offset by the lack of an index and the substantial price.

R. S. KNOX

*Department of Physics and Astronomy,
University of Rochester,
Rochester, New York*

Books Received

Advances in Virus Research. Vol. 14. Kenneth M. Smith and Max A. Lauffer, Eds. Academic Press, New York, 1969. viii + 352 pp., illus. \$16.

Aldine University Atlas. Norton Ginsburg, Harold Fullard, and H. C. Darby, Eds. Aldine, Chicago; Scott, Foresman, Glenview, Ill., 1969. viii + 312 pp., illus. \$8.50.

Allied Health Manpower: Trends and Prospects. Harry I. Greenfield, with the assistance of Carol A. Brown. Columbia University Press, New York, 1969. xx + 196 pp. \$8.

Analytic Geometry and the Calculus. A. W. Goodman. Macmillan, New York; Collier-Macmillan, London, ed. 2, 1969. xxiv + 824 pp., illus. \$12.95.

The Arnepik and Tyara Sites. An Archaeological Study of Dorset Culture

Origins. William E. Taylor, Jr. Published in cooperation with the National Museums of Canada, Ottawa, by the Society for American Archaeology, Salt Lake City, 1968. xiv + 130 pp., illus. Paper, \$4.50. Memoirs of the SAA, No. 22. Issued as *American Antiquity*, Vol. 33, No. 4, Part 2, 1968.

The Art of Looking at Broad Valleys. C. H. Crickmay. Published by the author, Calgary, Alberta, Canada, 1969 (available from Evelyn de Mille Books, 616 Third St., SW, Calgary). vi + 24 pp. Paper, \$2.

Astronomischer Jahresberichte. 67. Band, Die Literatur des Jahres 1967. W. Lohmann, F. Henn, U. Güntzel-Lingner, and D. Krahn, Eds. Published by Astronomische Rechen-Institut, Heidelberg. De Gruyter, Berlin, 1969. xii + 804 pp. Paper, DM 80.

The Audio-Tutorial Approach to Learning. Through Independent Study and Integrated Experiences. S. N. Postlethwait, J. Novak, and H. T. Murray, Jr. Burgess, Minneapolis, ed. 2, 1969. viii + 152 pp., illus. Paper, \$4.75.

Bibliographie Agricole Courante Roumaine. Vol. 2, No. 4 (1325-1838), 1968. Centre de Documentation Agricole, Institut Central de Recherches Agricoles, Bucharest, 1968. 104 pp. Paper.

The Biological Perspective. Introductory Readings. Watson M. Laetsch, Ed. Little, Brown, Boston, 1969. xii + 580 pp., illus. Paper, \$5.

Calculus of Variations. J. C. Clegg. Oliver and Boyd, Edinburgh; Interscience (Wiley), New York, 1968. x + 190 pp., illus. \$4. University Mathematical Texts, No. 38.

Calculus, with Analytic Geometry. Functions of One Variable. Angus E. Taylor and Charles J. A. Halberg, Jr. Prentice-Hall, Englewood Cliffs, N.J., 1969. xviii + 934 pp., illus. \$12.95.

Chemical Reactions in Electrical Discharges. A symposium, Miami Beach, 1967. Bernard D. Blaustein, Symposium Chairman. American Chemical Society, Washington, D.C., 1969. xii + 516 pp., illus. \$15. Advances in Chemistry Series, No. 80.

Chemistry. Glenn H. Miller. Harper and Row, New York, 1969. xiv + 418 pp., illus. \$9.95.

Child Psychology. Behavior and Development. Ronald C. Johnson and Gene R. Medinnus. Wiley, New York, ed. 2, 1969. xiv + 690 pp., illus. \$8.95.

Community Problem Solving. The Delinquency Example. Irving A. Spengel. University of Chicago Press, Chicago, 1969. x + 342 pp. \$10.

The Determination of Epoxide Groups. B. Dobinson, W. Hofmann, and B. P. Stark. Pergamon, New York, 1969. viii + 80 pp., illus. \$6. Monographs in Organic Functional Group Analysis, vol. 1.

Dictionary of Rubber Technology. Alexander S. Craig. Philosophical Library, New York, 1969. xii + 228 pp., illus. \$15.

Directory of Scientific Directories. A World Guide to Scientific Directories Including Medicine, Agriculture, Engineering, Manufacturing and Industrial Directories. Anthony P. Harvey. Hodgson, Guernsey, Channel Islands, Great Britain, 1969. 272 pp. SF 32.50.

The Drug Dilemma. Sidney Cohen. McGraw-Hill, New York, 1968. xvi + 140 pp. Paper, \$4.95. McGraw-Hill Paperback Series in Health Education.

Drugs. I, Society and Drugs: Social and Cultural Observations. II, Students and Drugs: College and High School Observations. Richard H. Blum and Associates. Jossey-Bass, San Francisco, 1969. Vol. 1 (xvi + 400 pp.); vol. 2 (xx + 404 pp.). \$25. Jossey-Bass Behavioral Science Series.

Eagles, Hawks and Falcons of the World. In two volumes. Leslie Brown and Dean Amadon. McGraw-Hill, New York, 1968. 946 pp., illus. Boxed, \$59.50.

Early Foundations of Mexican Herpetology. An Annotated and Indexed Bibliography of the Herpetological Publications of Alfredo Dugès, 1826-1910. Hobart M. Smith and Rozella B. Smith. University of Illinois Press, Urbana, 1969. x + 86 pp., illus. \$6.50.

Einführung in die höhere Mathematik. Lehrbuch für Naturwissenschaftler und Ingenieure ab 1. Semester. H. Dallmann and K.-H. Elster. Vieweg, Braunschweig; Winter'sche Verlagshandlung, Basel, 1968. 720 pp., illus. Paper, DM 36. Uni-Texte.

Einstein's Vision. Wie steht es heute mit Einsteins Vision, alles als Geometrie aufzufassen? John Archibald Wheeler. Springer-Verlag, New York, 1968. viii + 108 pp., illus. \$4.95.

Elementary Mechanics of Deformable Bodies. J. O. Smith and O. M. Sidebottom. Macmillan, New York; Collier-Macmillan, London, 1969. xviii + 638 pp., illus. \$12.95.

Elements of Gasdynamics and the Classical Theory of Shock Waves. Ya. B. Zel'dovich and Yu. P. Raizer. Wallace D. Hayes and Ronald F. Probstein, Eds. Academic Press, New York, 1968. viii + 120 pp., illus. Paper, \$3.95. First chapter of the 1966 edition of *Physics of Shock Waves and High-Temperature Hydrodynamic Phenomena*.

The Emergence of Modern Nursing. Vern L. Bullough and Bonnie Bullough. Macmillan, New York; Collier-Macmillan, London, ed. 2, 1969. x + 278 pp., illus. \$6.95.

Equilibrium Statistical Mechanics. J. E. Mayer. Pergamon, New York, 1968. x + 242 pp., illus. \$14. International Encyclopedia of Physical Chemistry and Chemical Physics, Topic 8, vol. 1.

The Evolution of Preventive Medicine in the United States Army, 1607-1939. Stanhope Bayne-Jones. Prepared and published under the direction of Leonard D. Heaton. Robert S. Anderson, Ed. Office of the Surgeon General, Department of the Army, Washington, D.C., 1968 (available from the Superintendent of Documents, Washington, D.C.). xiv + 258 pp., illus. \$2.50.

Experimental Viral Hepatitis. Marcello Piazza. Thomas, Springfield, Ill., 1969. xii + 276 pp., illus. \$22.50.

Exploring Heat. Alexander Efron. Hayden, New York, 1969. viii + 88 pp., illus. Paper, \$2.45. Hayden Modern Physics Series.

Exploring Matter and Nuclear Energy. Alexander Efron. Hayden, New York,

(Continued on page 627)